Green Streets

Environmentally Friendly Landscapes
for Healthy Watersheds

Green Streets in Your Neighborhood

Department of Environmental Protection

Clifton Park

Introduction

THE BIG PICTURE...

The County plans to improve stormwater treatment on 4,300 acres of hard surfaces over the next five to ten years. That is a lot of ground to cover, and a variety of approaches are needed to meet this goal, given the extent of development our county.

Just how big is 4,300 acres?

6.7 square miles. That's about the size of the District of Columbia.

What are Green Streets?

Green Streets are roadway Low Impact Development (LID) designs that reduce and filter rainfall and pollutants that wash off surface areas (stormwater runoff), and enter our streams, degrading the water quality of our local streams and rivers. Green Streets is a County initiative that captures stormwater runoff in small landscaped areas that let water soak into the ground while plants and soils filter pollutants. Green Streets practices help to replenish groundwater and baseflows in our streams, rather than sending polluted, heated water through pipes directly into our streams. They also create aesthetically attractive streetscapes, provide natural habitat, and help visually to connect neighborhoods, schools, parks, and business districts.

Green Streets practices are constructed within the street right-of-way. Factors like utilities, existing drainage patterns, soils, tree impacts, the amount of runoff volume, and many other considerations are taken into account in the design of Green Streets.

Stormwater 101

As our neighborhoods were developed, the watersheds that support local streams were greatly altered. Buildings, roads, driveways and lawns have replaced much of the natural vegetation, forest cover, and soils that used to slowly filter rainwater. Development provides us with places to live, work, and play, but its hard surfaces prevent rainwater from soaking back into the ground and allow pollutants to enter local streams more easily. Rainwater falling on hard surfaces is directed to a storm drain where underground pipes transport it to local streams, along with pollutants it picks up along the way. In suburban areas, even lawns can act like a hard surface if they are highly compacted or do not drain well.

How Can I Get Involved

Many of the activities that you do on your property, in your yard, or in your neighborhood may directly affect the water quality of local streams. In addition to the amount of rainwater that may run off of your land, overfertilizing your lawns, improper septic system operation, car washing and car maintenance activities, if not properly done, can pollute runoff that flows to local streams. Preventing pollution at its source is part of the solution to ensuring that the County achieves healthy watersheds.

The County's RainScapes program promotes and implements projects on residential, institutional, and commercial properties to reduce stormwater pollution. The County offers technical and financial assistance (in the form of rebates) to encourage property owners to implement eligible RainScapes techniques on their property. Visit www.rainscapes.org for more information and to apply online.

Collectively we can help by participating in RainScapes and taking other easy everyday steps to prevent pollution. Go to www.montgomerycountymd.gov/protectyourwatershed for more information about what you can do to protect your watershed.

Techniques to Manage Stormwater Runoff

Rain Gardens

- A shallow depression planted with native plants
- Typical profile has a three inch mulch layer, two feet of planting media, followed by one to two feet of gravel
- Collects, stores and allows rainwater from roofs, driveways, patios, or sidewalks to absorb into the ground
- Adds beauty to your lawn, with maintenance that varies based on the plants you select
- Requires adequate space and well-draining soils

Bioretention Gardens

- Very similar to a Rain Garden - a shallow depression planted with native plants
- Typical profile has a three inch mulch layer, two feet of planting media, followed by one to two feet of gravel
- Gravel layer has an underdrain pipe that is connected to a nearby storm drain to help drain the facility after rain events
- Collects, stores and allows rainwater from roadway to absorb into ground
- Adds beauty to your street with a variety of plants
- Requires adequate space, but does not require well-draining soils because it has an underdrain

Tree Box Filters

- Mini bioretention boxes filled with a soil mixture, a mulch layer, under-drain system and a shrub or tree
- Typically used when space is limited
- Requires proximity to a storm drain system

Pervious Sidewalk, Permeable Pavers & Pavement Removal

- Pervious sidewalk allows water to infiltrate into ground below
- Permeable pavers can be used to create parking pads along the roadway, also allowing water to infiltrate
- Pavement removal may be used in combination with a stormwater management technique depending on site conditions
- Less pavement means less stormwater and pollutants entering local streams

Curb Extensions

- Placed within the road right-of-way between the curb and the sidewalk
- Sometimes curbs are extended into the parking lane and pavement is removed to widen the available footprint and treatable drainage area
- Requires adequate space and minimal impact to parking

Grass swales

- Allow runoff to percolate into the ground, reducing the amount of runoff leaving the roadway
- Check dams can be used within a swale to slow the flow rate, promote infiltration, and create small, temporary ponding areas
- The vegetation covering the side slopes and channel bottom provides a filtration surface for the water and helps to reduce the flow velocity

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Frequently Asked Questions (FAQ)

Why are you creating Green Streets in my neighborhood?

This project is part of the County's need to meet Federal and State mandates to control and treat stormwater runoff. The goal of this project is to reduce stormwater runoff, minimize pollution, promote infiltration, and restore stream conditions in the Northwest Branch, the Anacostia River, and the Chesapeake Bay. The Department of Environmental Protection is planning Green Streets concurrently with the Department of Transportation's roadway rehabilitation projects so that construction impacts to the neighborhood are minimized. The Franklin Knolls project area is split into four phases. Work will be performed south to north, beginning with the Clifton Park neighborhood as phase 1.

What will the Green Streets LID features look like?

There are many different looking Green Streets and LID features. It may be best to view some of the photo examples provided in this brochure. In the case of a rain garden or bioretention, they are typically bowl-shaped, sometimes sodded, and sometimes landscaped with plants and mulch. Tree box filters look smaller, with a square inlet with a tree or small shrub(s) planted inside a filter box filled with a bioretention soil mix. Typically, landscape designers work with the County to develop aesthetically pleasing designs that help connect a neighborhood together and provide a sense of neighborhood identity.

Where will the Green Streets LID features be constructed?

The Green Streets facilities are typically constructed within the street or within the County right-of-way areas (i.e. the grassy strip between the sidewalk and the curb).

When will the Green Streets LID features be constructed?

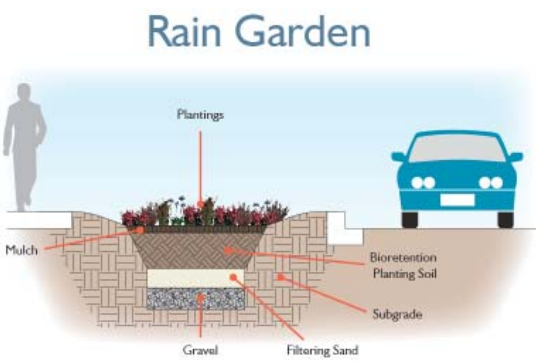
The County is planning construction for Summer/Fall 2012. The project is in the preliminary design phase as of April 2012.

Who is responsible for maintaining the Green Street practices, and how often will routine maintenance occur?

The Department of Environmental Protection is currently committed to annual routine maintenance at a minimum,and as needed repairs for anything not functioning properly.

How do the Green Streets LID features work?

It depends on the type of practice, but generally, stormwater runoff from the roadway is diverted into an inlet opening in the curb, and is filtered through a mixture of highly permeable soils (sand, mulch, compost), then stored in an underlying gravel layer before percolating into the groundwater and/or entering into an underdrain that flows to the storm drain system. Runoff has an opportunity to cool down while the plants help absorb nutrients and microbes around the plant roots help break down pollutants. When certain facilities are full after rain events, water may pond up to six inches before draining within 12 to 48 hours, depending on the type of facility and site conditions.



How can I find out more information?

For more information, contact Jennifer St. John at:
jennifer.st.john@montgomerycountymd.gov
or 240-777-7740. Or visit our project webpage at:
www.montgomerycountymd.gov/restorationprojects
Click on Northwest Branch, then Franklin Knolls Green Streets.

Working Together - A Neighborhood Process

Project Selection

Project is selected based on priority watersheds identified in Watershed Study Report, or based on the Department of Transportation's roadway rehabilitation schedule, or other priority

Preliminary Design Phase

- Opportunities are identified within the neighborhood based on available information and field visits by the county's project team

Concept Design Phase – 30 - 60%

- Proposed designs are prepared utilizing detailed field survey and geotechnical information
- Public meeting to receive input from the community.
- Adjustments are made to design

Design Phase – 60 - 90%

- Further public outreach and design revisions
- Example: neighborhood walk

Final Design and Construction

- Designs are finalized
- Facilities are constructed
- Facilities are planted

Maintenance

- Final inspection
- As-builts drawings are accepted
- Facilities are entered into the maintenance system
- Facilities are inspected and maintained annually

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Project Limits and Proposed Phases